COMPOSITION AND METHOD FOR THE IN SITU REMOVAL OF SCALE FROM A SUBSTRATE

ABSTRACT OF THE DISCLOSURE

[0058] A composition and method for the removal of scale from a substrate are disclosed. The composition and method are more specifically utilized for the in situ removal of silicate-containing scale from interior surfaces of boilers and other heat exchange equipment. The silicate-containing scale is deposited in the boilers as silicate-sulfate complexes of calcium, magnesium, aluminum, and other metal atoms that are present in water. The composition, which is circulated throughout the boiler to contact the interior surfaces, such as the boiler tubes, includes a chelating agent having at least two carboxylic acid functional groups, preferably citric acid. The composition also includes an alkali metal hydroxide basic agent. The preferred alkali metal hydroxides are either potassium or sodium hydroxide. The basic agent establishes an overall basic pH of from 7 to 14 in the composition to enable precipitation of the metal atoms from the composition after interaction with the chelating agent.